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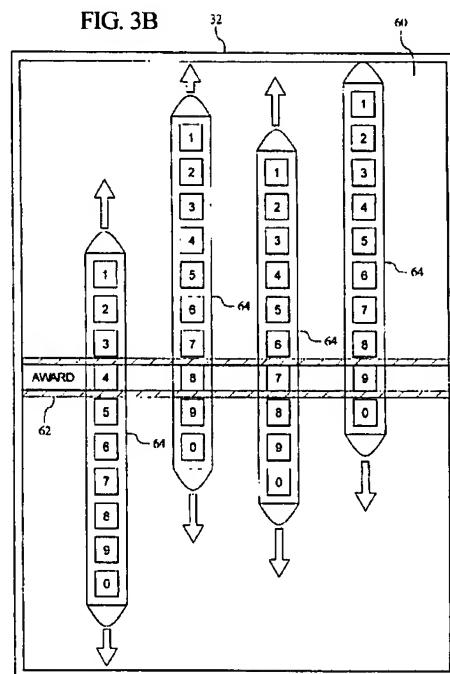
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(54) Abstract Title: A gaming machine with linearly-movable symbol indicators

- (57) A gaming device has one or more independently linearly movable symbol indicators (70). In one embodiment, the gaming device displays an award amount to the player using the mechanical symbol indicators. Each mechanical symbol indicator includes a symbol display (64) that is linearly movable within the housing of the gaming device. One or more indicator members (62) indicate numbers or symbols (66) on the symbol displays (64) when the symbol displays stop moving. These indicated symbols or numbers display to the player an award amount.



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FIG. 1

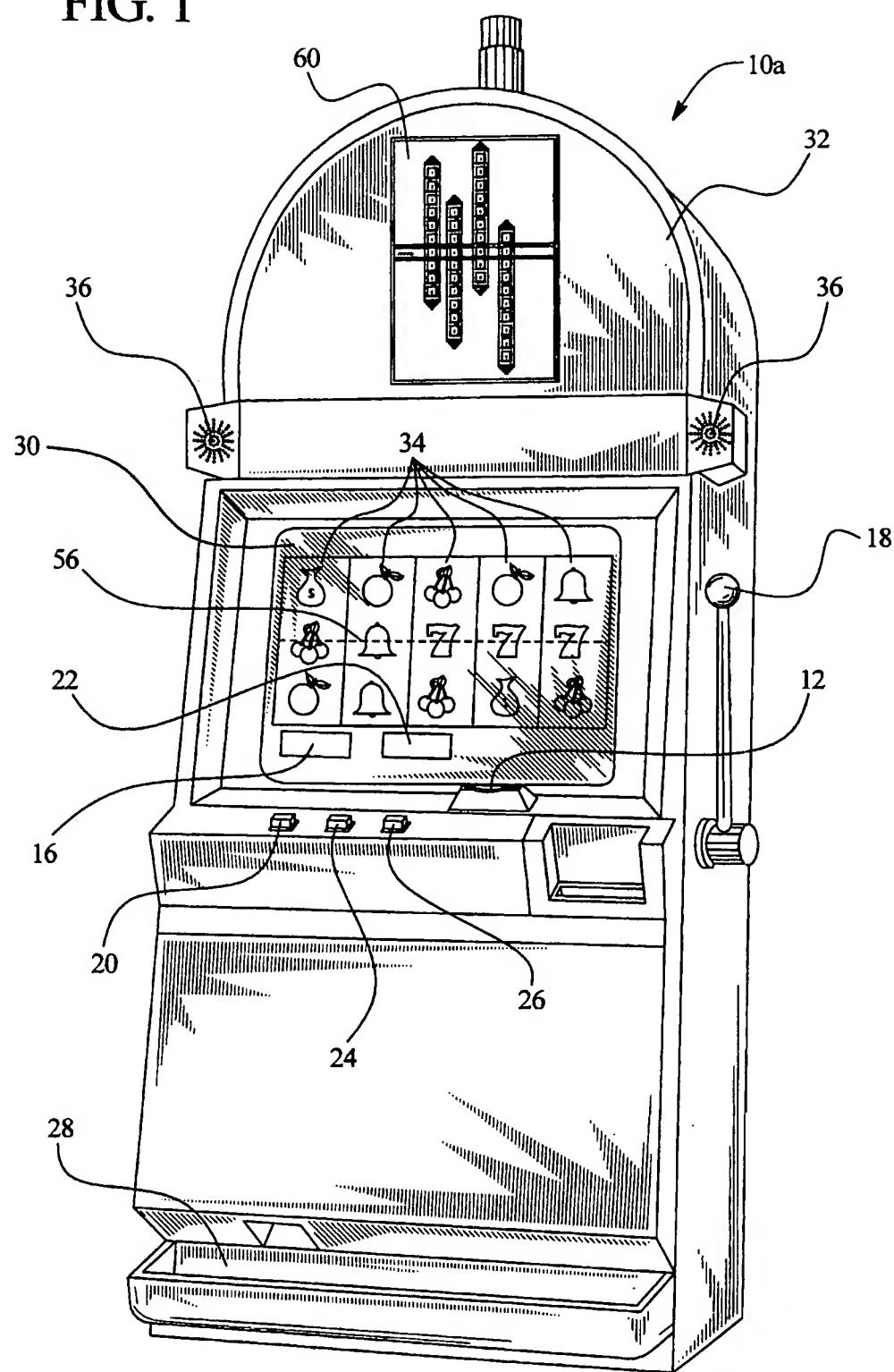


FIG. 2

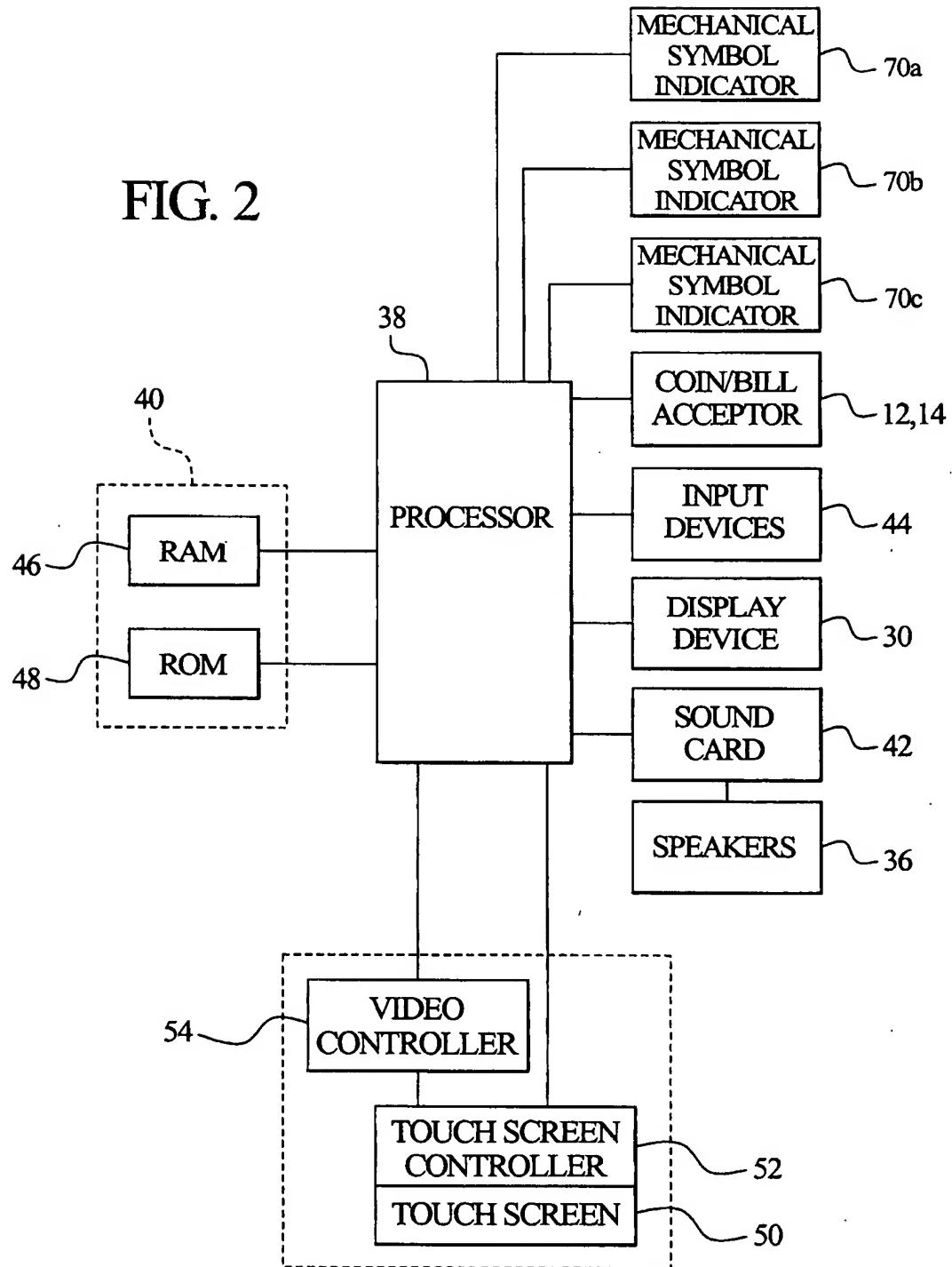


FIG. 3A

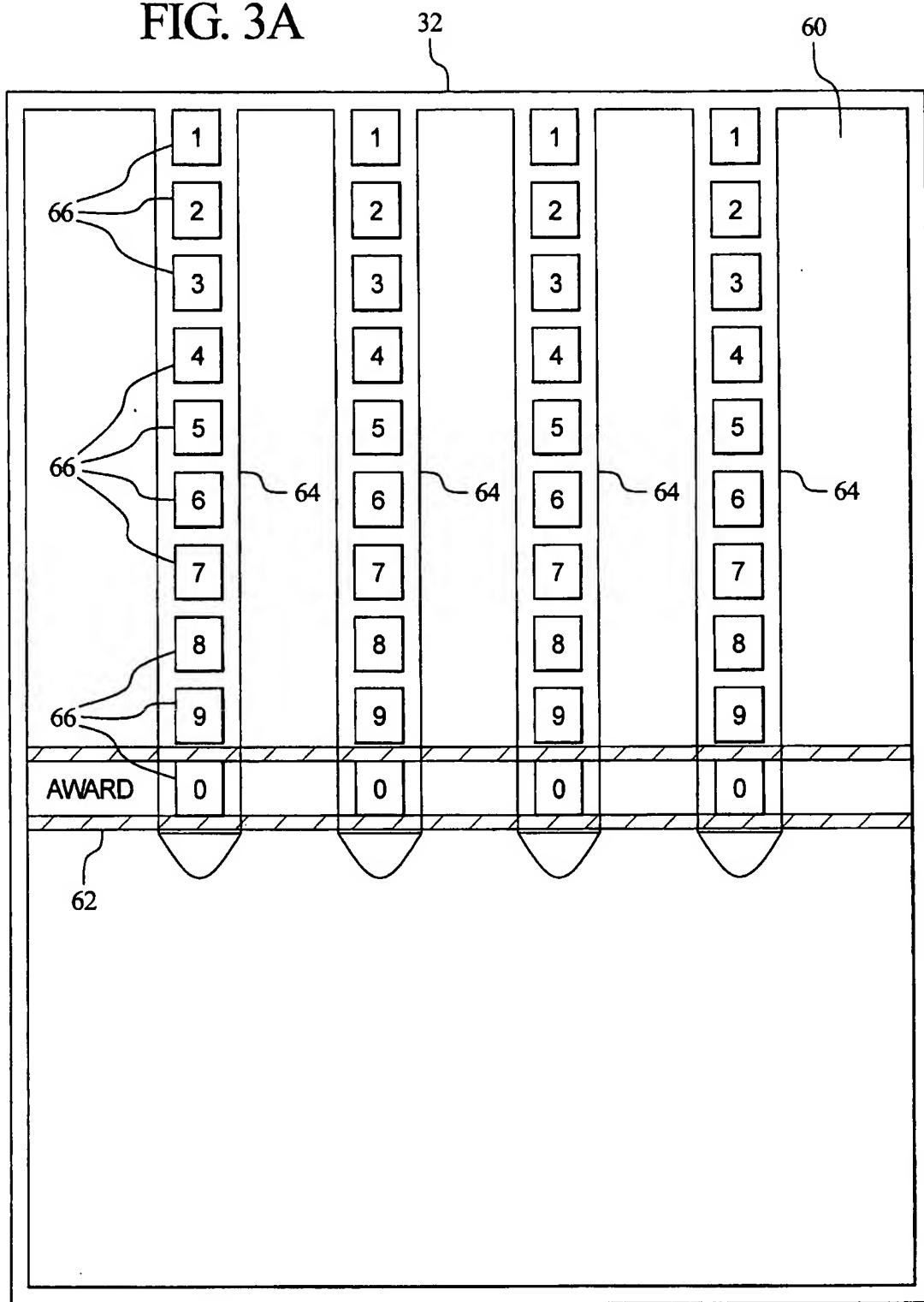


FIG. 3B

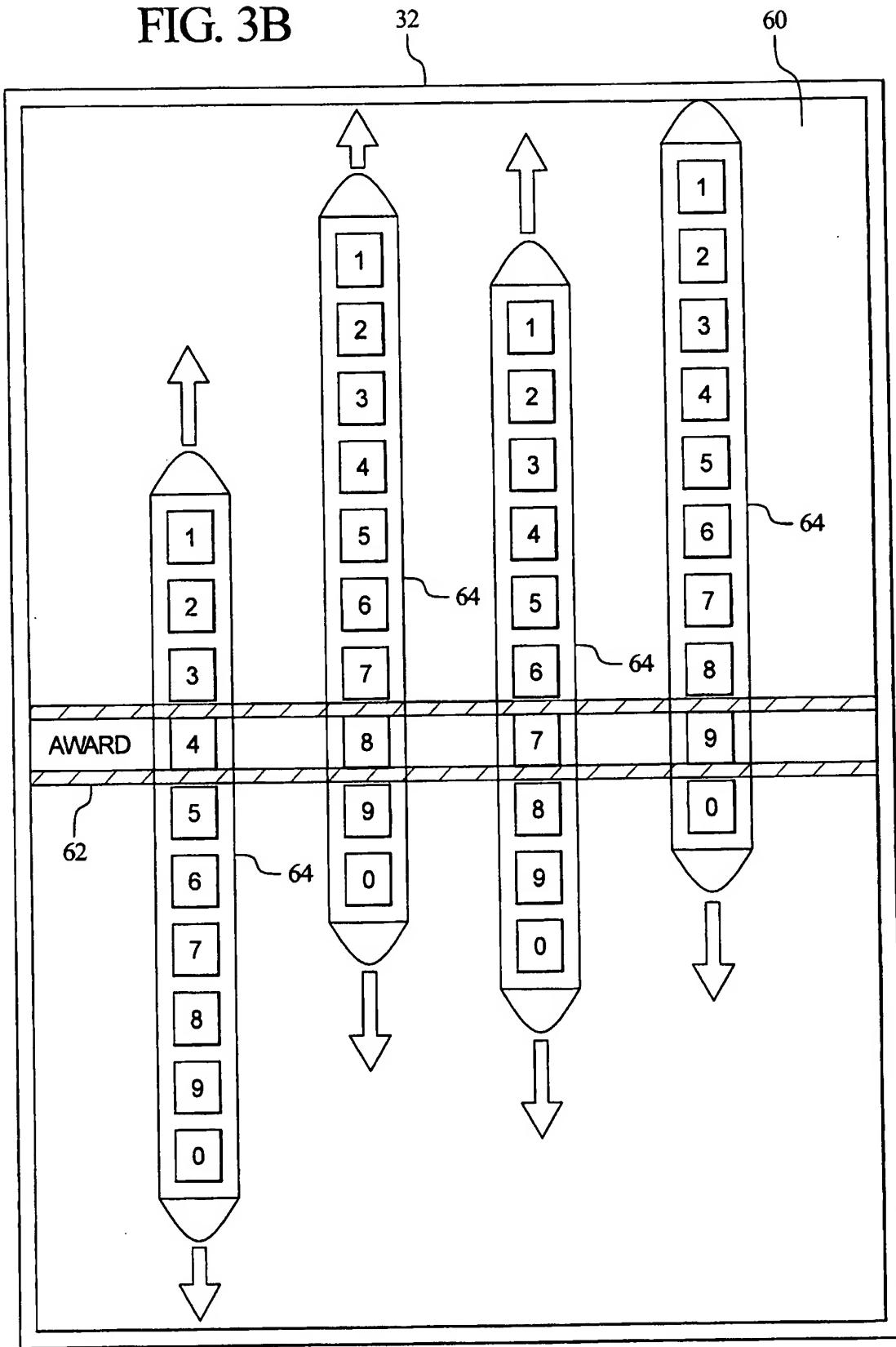


FIG. 3C

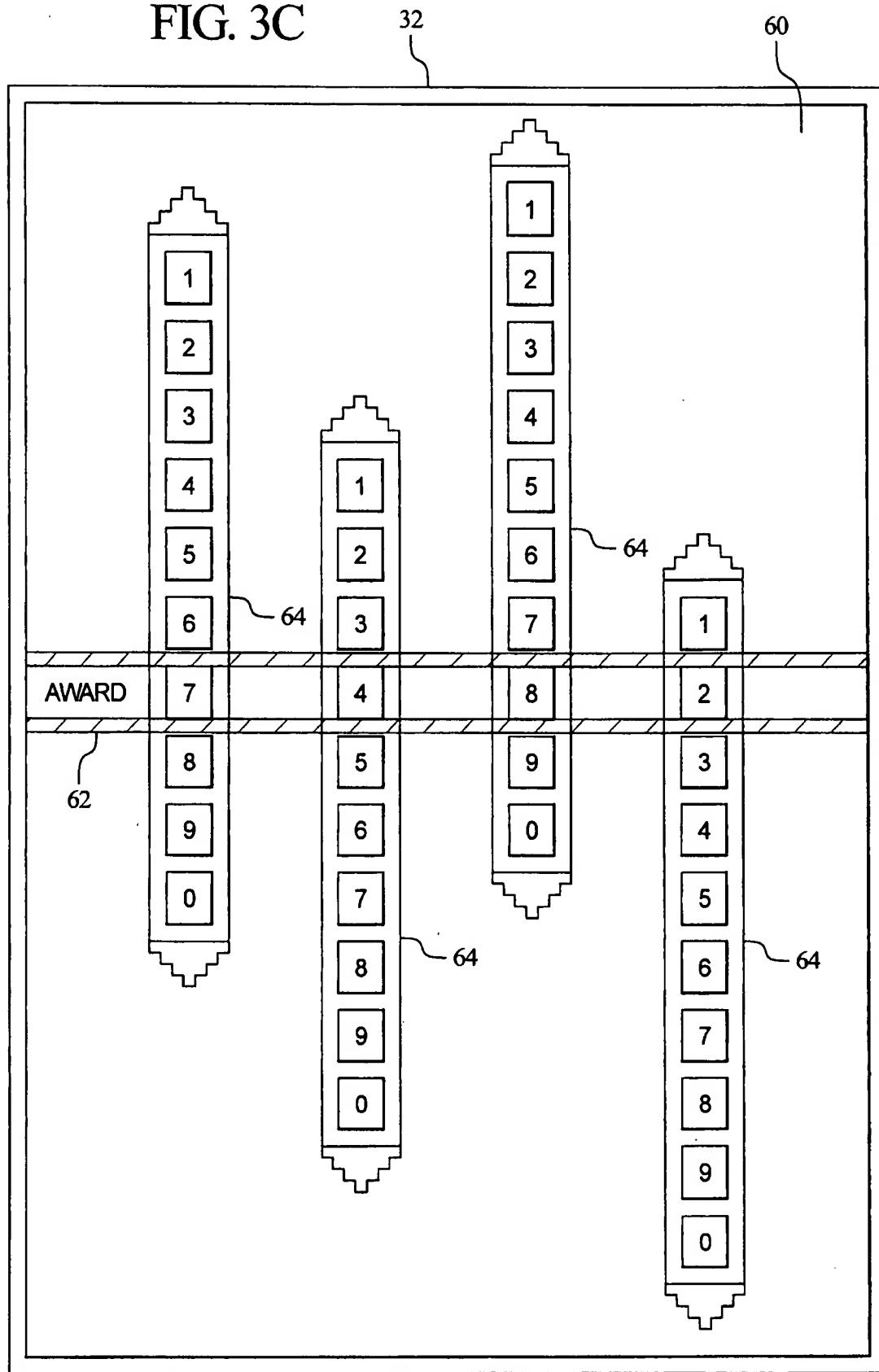
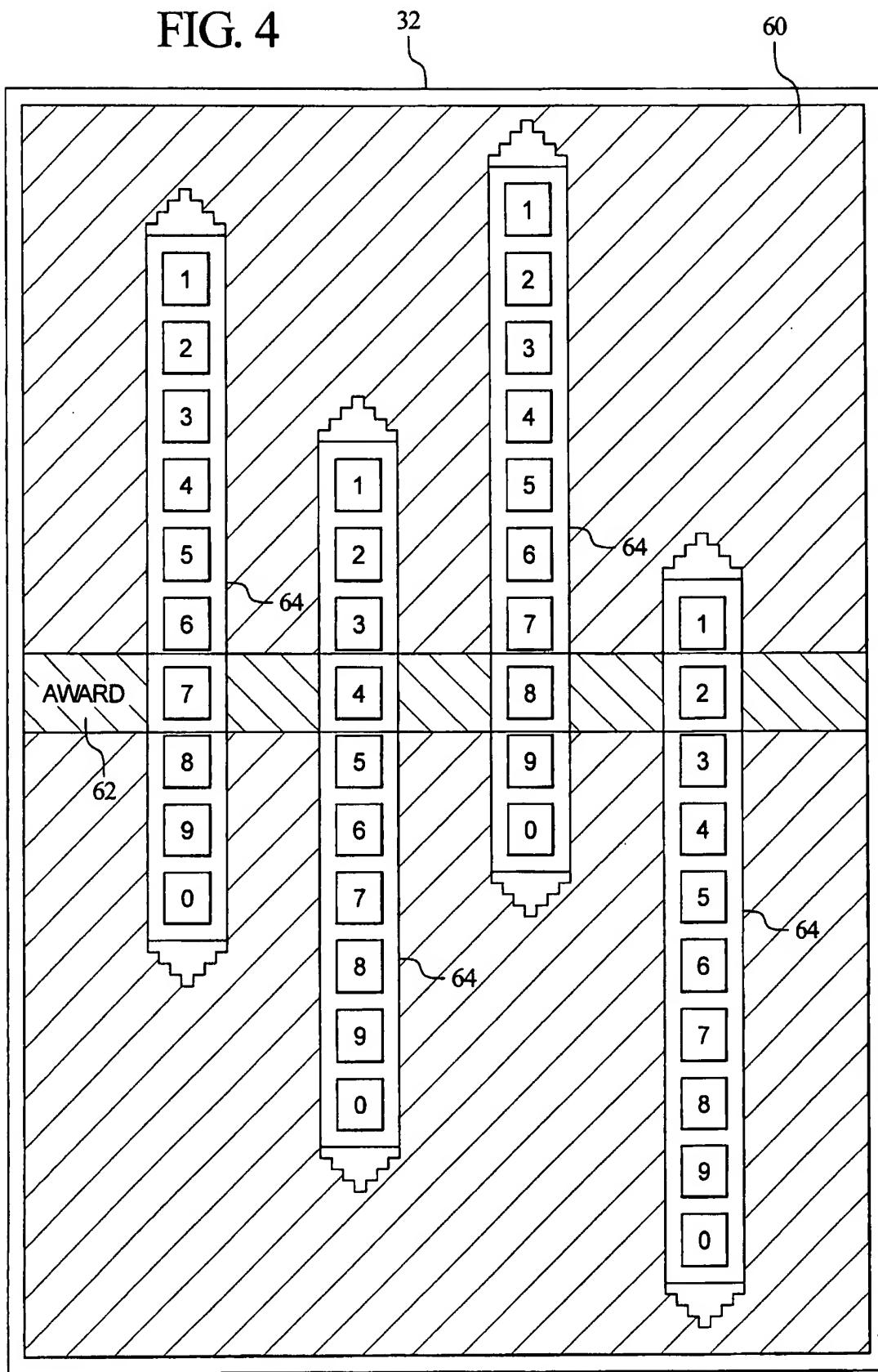


FIG. 4



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FIG. 5A

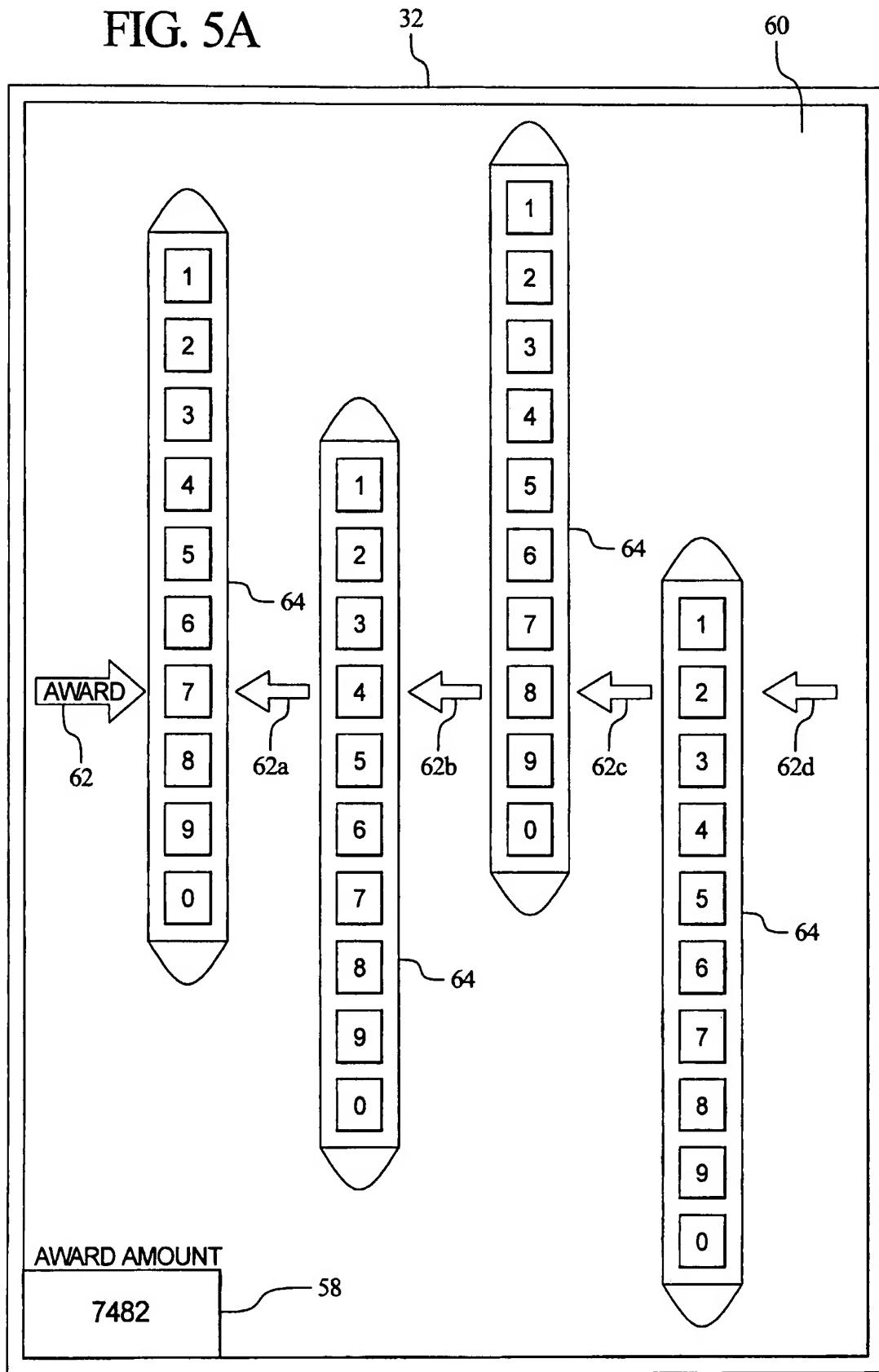
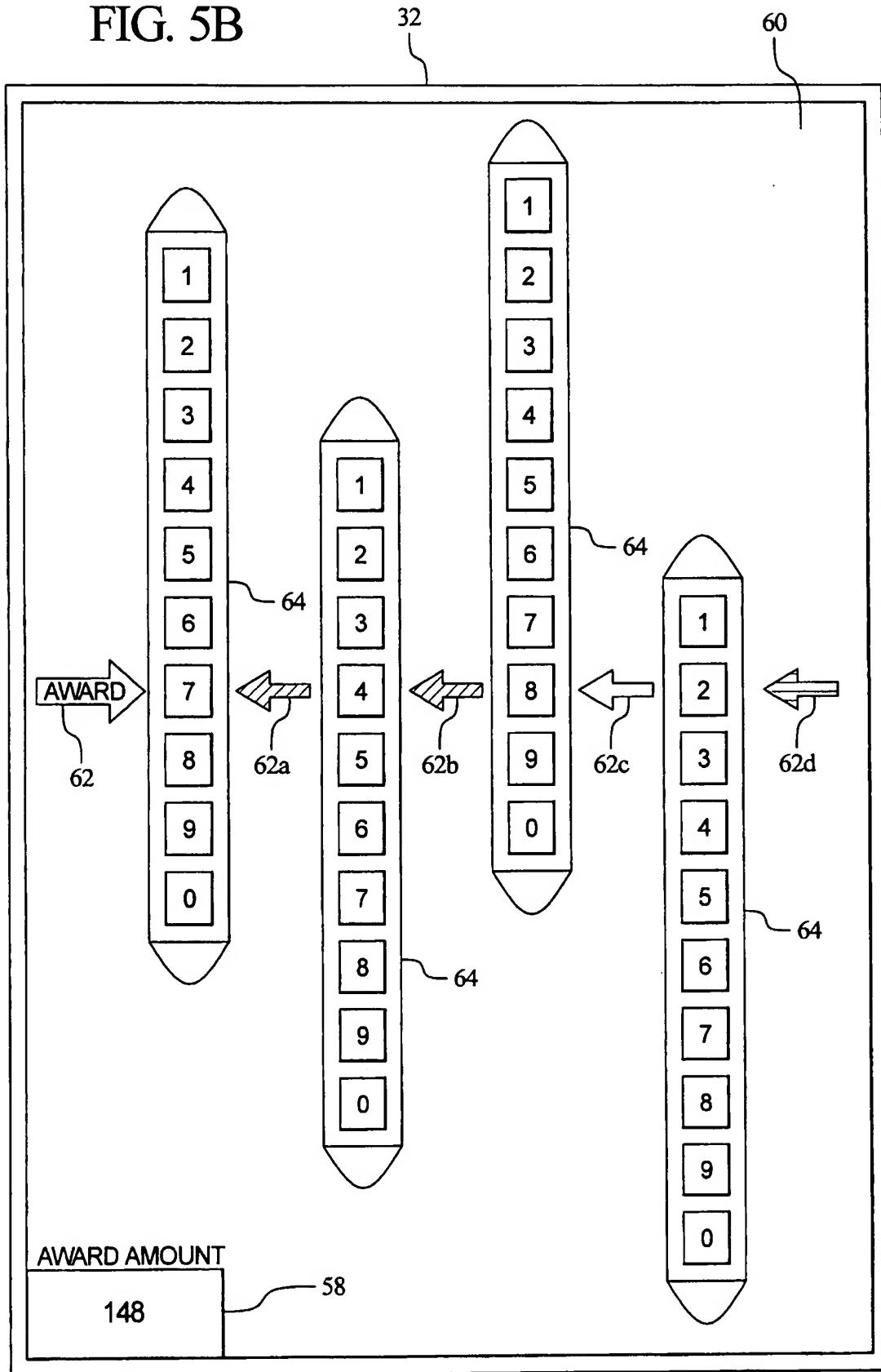


FIG. 5B



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FIG.6

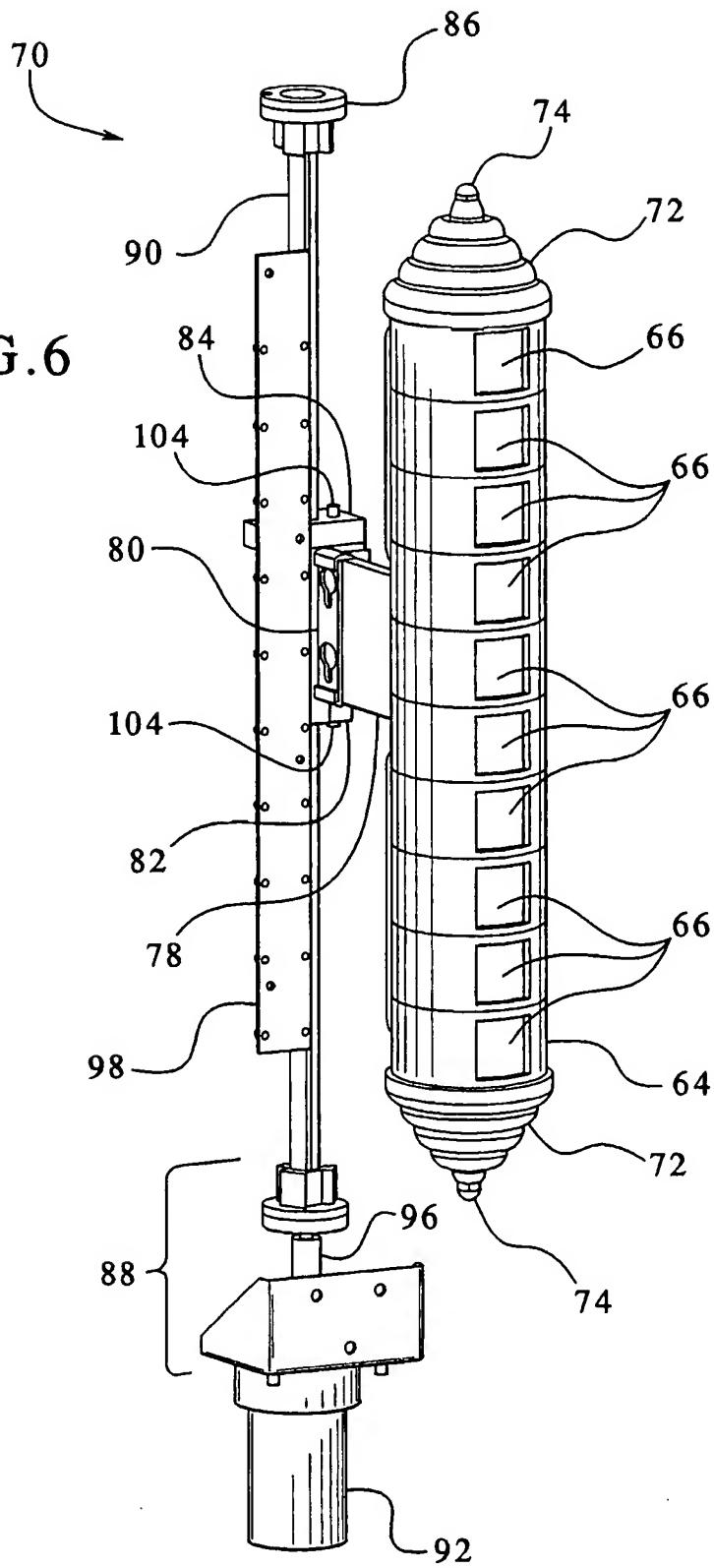
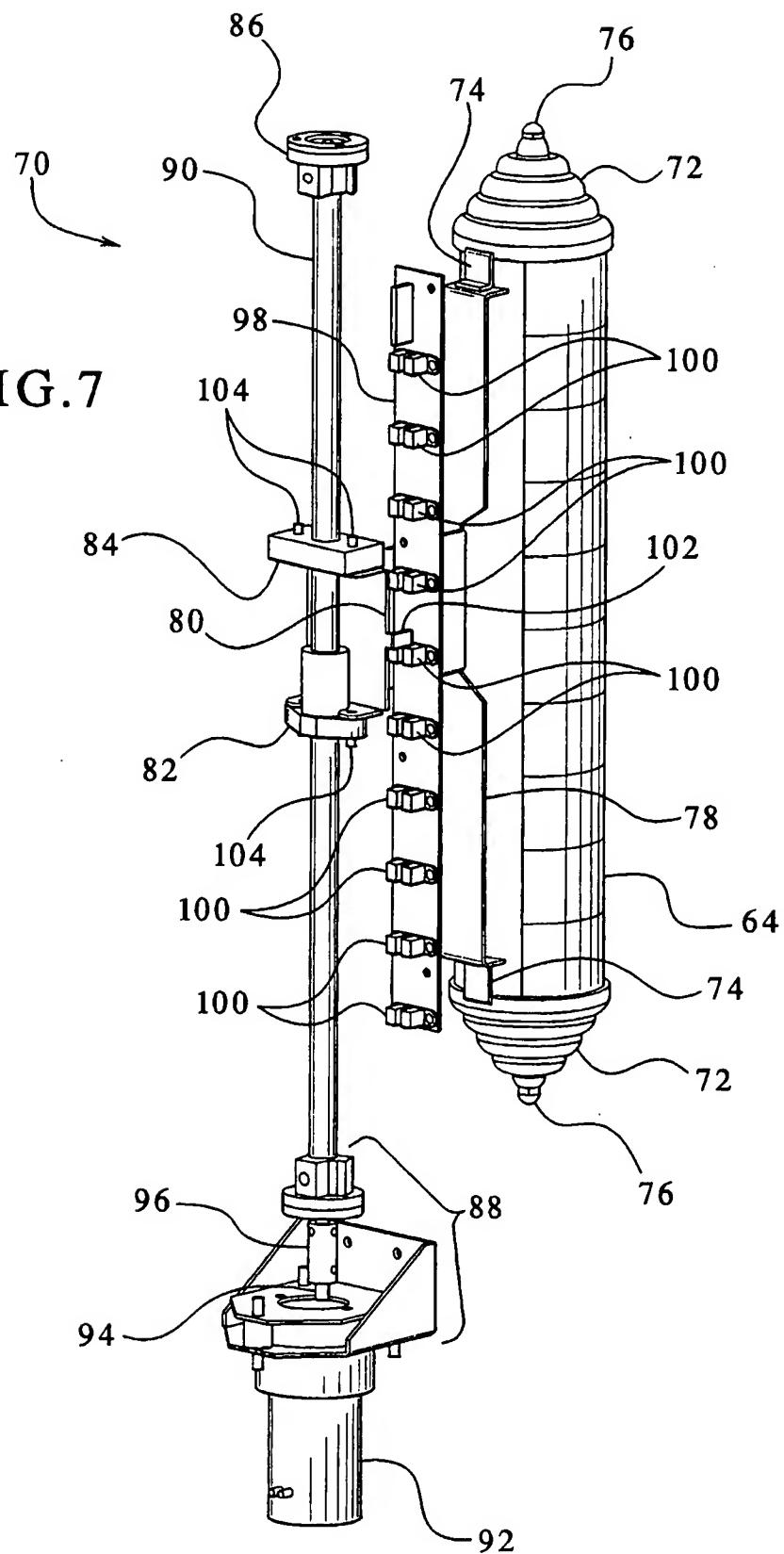
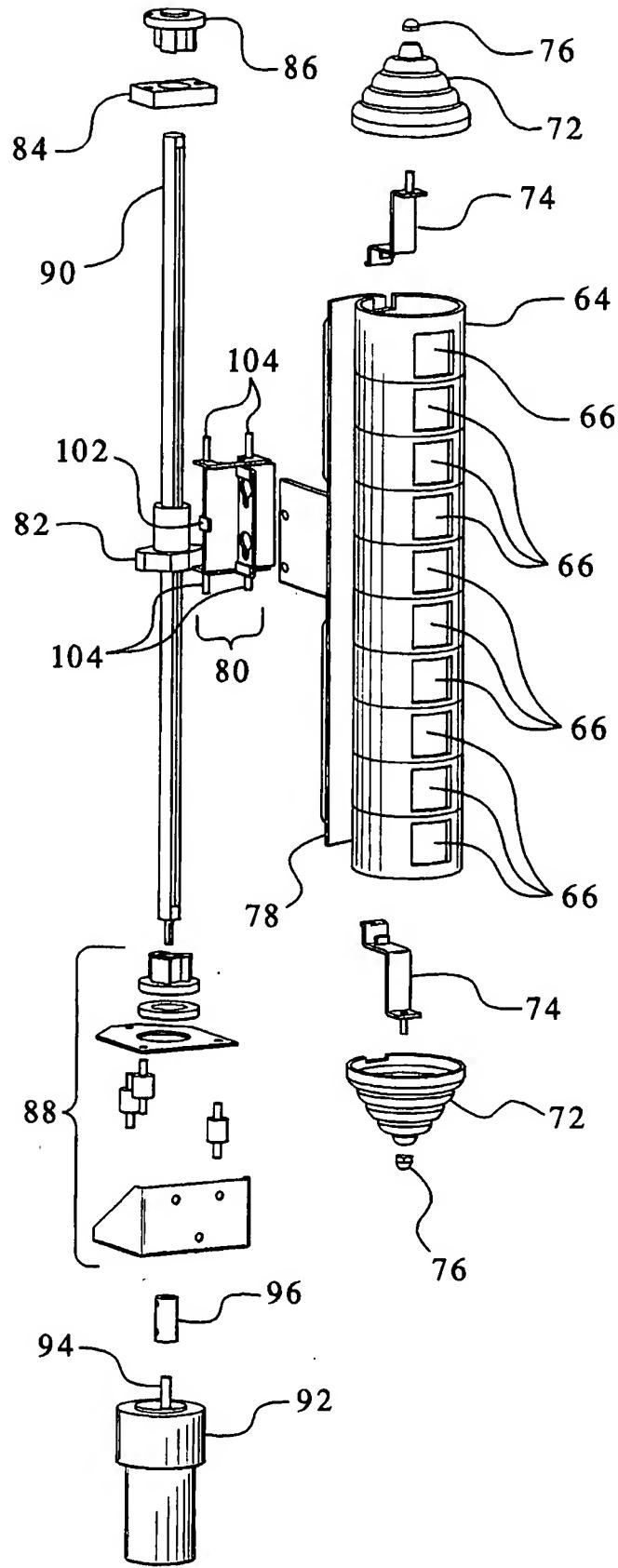


FIG. 7

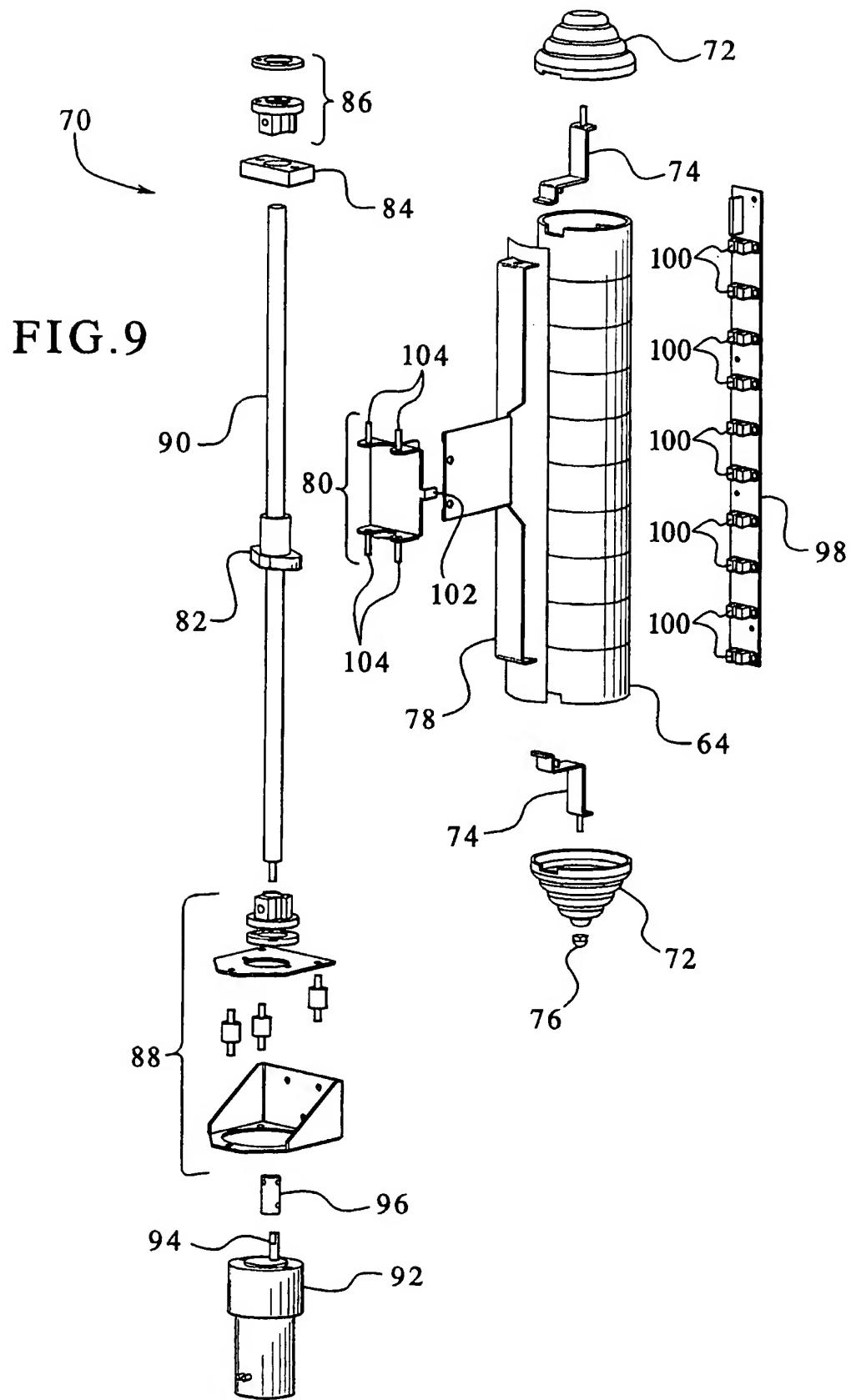


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FIG.8



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S P E C I F I C A T I O N

TITLE OF THE INVENTION

**"GAMING DEVICE HAVING INDEPENDENTLY LINEARLY MOVEABLE  
SYMBOL INDICATORS"**

5

BACKGROUND OF THE INVENTION

- Gaming device manufacturers strive to make gaming devices that provide as much enjoyment, entertainment and excitement as possible to players. Providing interesting and exciting primary and secondary games in which a player has an opportunity to win potentially large awards or credits is one way to enhance player enjoyment and excitement. Another way to enhance a player's enjoyment, entertainment and excitement with a gaming device is by including lights, sounds and other visual or audio or audio-visual effects in the gaming machines.
- 15 Some known gaming device use mechanical devices such as reels or wheels to enhance the attraction of wagering gaming machines to players and also to enhance the player's game playing experience. These mechanical devices enable a player to see physical representations of a game or a portion of a game, which increases the player's enjoyment of the game. Similarly, 20 when a player wins an award, known gaming devices provide the award accompanied by lights, sounds, and other visual or audio or audio-visual effects to increase the player's excitement upon receiving an award.

Therefore, to increase player enjoyment and excitement, it is desirable to provide new and different mechanical devices in conjunction with wagering 25 gaming devices that provide awards to a player.

SUMMARY OF THE INVENTION

The present invention provides a wagering gaming device having independently linearly moveable or oscillating symbol indicators. In a preferred embodiment, the gaming device includes a cabinet having a housing connected 30 to the top of the cabinet. The housing supports one or more independently linearly moveable mechanical symbol indicators. Each linearly movable mechanical symbol indicator includes a symbol display with a plurality of symbols such as numbers displayed in substantially linear alignment along its

length. The housing also includes an indicator member that indicates to a player which symbols or numbers to read on one or more of the symbol displays. The symbol displays are linearly movable within the housing such that the symbols or numbers marked by the indicator members change according to the

5 movement of the symbol displays.

In one embodiment where the symbols are numbers, the symbol displays each independently oscillate or move back and forth before stopping and displaying the award amount. The movement of the symbol displays increase player excitement as the different possible awards are indicated to the player.

10 In another embodiment, the symbol displays linearly moves or oscillates while a game is not being played. In this case, the gaming device is in an attract mode wherein the moving symbol displays help to attract player interest in the game.

15 In another embodiment, the movement of the symbol displays indicate the beginning of a bonus round, game or game event. The random movement of the symbol displays increases the excitement and enjoyment during the occurrence of a bonus event.

20 In one embodiment, the indicator member includes a mask extending substantially horizontally across the housing through which a symbol such as a number on the substantially vertically extending and moveable symbol display may be read by a player. In other embodiments, several indicator members mark the symbols such as numbers or digits of or that indicate an award amount to be provided to the player. The indicator members in these embodiments may be movable and/or may be illuminated to convey information about the number

25 or symbol marked or indicated.

It should be appreciated that the symbol display can display any suitable images, symbols or indicia such as bells, hearts, fruits, numbers, letters, bars or other images or symbols which preferably correspond to a theme associated with the gaming device.

30 In one embodiment, the numbers indicated on the symbol displays are the individual digits of an award amount to be awarded to the player. In another embodiment, the numbers indicated are added to obtain the amount to be awarded to the player. In another embodiment, one or more numbers indicate

the award and one or more numbers indicate one or more modifiers such as multipliers to be applied to the award to determine a total award amount.

The mechanical symbol indicators can be activated in any of a number of situations during game play. In one embodiment, upon the occurrence of an 5 event that triggers a variable award, the mechanical symbol indicators can display the award amount. Similarly, in another embodiment, a variable award can be won in a bonus game environment where the linearly moving mechanical symbol indicators display the award amount.

In another embodiment, the award amount is determined by a processor 10 prior to or during the activation of the mechanical symbol indicators. In this case, the mechanical symbol indicators function as an award display, showing the award amount as determined by the processor to the player in an entertaining and enjoyable fashion. Further, certain embodiments of the present invention include a position sensor that provides data on the position of the 15 symbol display to the processor of the gaming device.

In another embodiment, the award amount provided to the player is randomly determined based on probabilities associated with each of the symbols on the symbol display. The processor moves and stops the symbol displays randomly based on the probabilities. The numbers or symbols 20 displayed when the symbol displays have stopped are sensed by the position sensors which send signals to the processor to verify the position of the symbol displays. The processor provides an award corresponding to those symbols or numbers displayed to the player.

It is therefore an advantage of the present invention to provide a gaming 25 device having at least one linearly moveable mechanical symbol indicator.

Another advantage of the present invention is to enhance the indication of awards to players.

Still another advantage of the present invention is to increase the attraction of a gaming device.

30 Additional features and advantages of the present invention are described in, and will be apparent from, the following Detailed Description of the Invention and the figures.

## BRIEF DESCRIPTION OF THE FIGURES

Fig. 1 is a front perspective view of a general embodiment of the gaming device of the present invention.

Fig. 2 is a schematic block diagram of the electronic configuration of one embodiment of the gaming device of the present invention.

Figs. 3A through 3C are enlarged front plan views of the housing containing the mechanical symbol indicators and showing the independent linear movement of the mechanical symbol indicators.

Fig. 4 is a front plan view of one alternative embodiment of the present invention.

Figs. 5A and 5B are front plan views of the housing showing different embodiments of the indicator members of the present invention.

Fig. 6 is a front perspective view of one embodiment of the mechanical symbol indicator of the present invention removed from the housing.

Fig. 7 is a rear perspective view of the embodiment of the mechanical symbol indicator of Fig. 6.

Fig. 8 is an exploded front perspective view of the embodiment of the mechanical symbol indicator of Fig. 6.

Fig. 9 is an exploded rear perspective view of the embodiment of the mechanical award indicator of Fig. 6.

## DETAILED DESCRIPTION OF THE INVENTION

### Gaming Device and Electronics

Referring now to the drawings, one embodiment of the gaming device of the present invention is illustrated in Fig. 1 as gaming device 10. In one embodiment, gaming device 10 is a slot machine having the controls, image panels and features of a conventional slot machine. It is constructed so that a player can operate it while standing or sitting, and gaming device 10 may be mounted in console or cabinet. However, it should be appreciated that gaming device 10 can be constructed as a pub-style table-top game (not shown) which a player can operate preferably while sitting. Furthermore, gaming device 10 can be constructed with varying cabinet and display designs.

Gaming device 10 can incorporate any suitable primary game such as slot, poker, blackjack or keno, any of their bonus triggering events and any of

their bonus round games. The symbols and indicia used on and in gaming device 10 may be in mechanical, electrical, electronic or video form.

As illustrated in Fig. 1, gaming device 10 includes a coin slot 12 and bill acceptor 14 where the player inserts money, coins or tokens. The player can 5 place coins in the coin slot 12 or paper money in the bill acceptor 14. Other devices could be used for accepting payment such as readers or validators for credit cards or debit cards. When a player inserts money in gaming device 10, a number of credits corresponding to the amount deposited is shown in a credit display 16. After depositing the appropriate amount of money, a player can 10 begin the game by pulling arm 18 or pushing play button 20. Play button 20 can be any play activator used by the player which starts any game or sequence of events in the gaming device.

Gaming device 10 also includes a bet display 22 and a bet one button 24, as shown in Fig. 1. The player places a bet by pushing the bet one button 15 24. The player can increase the bet by one credit each time the player pushes the bet one button 24. When the player pushes the bet one button 24, the number of credits shown in the credit display 16 decreases by one, and the number of credits shown in the bet display 22 increases by one. The gaming device 10 can include other wager indicators such as a bet max button.

20 A player may cash out and thereby receive a number of coins corresponding to the number of remaining credits by pushing a cash out button 26. When the player cashes out, the player receives the coins in a coin payout tray 28. The gaming device 10 may employ other payout mechanisms such as credit slips redeemable by a cashier or electronically recordable cards which 25 keep track of the player's credits.

Gaming device 10 also includes one or more display devices. The embodiment shown in Fig. 1 includes a central display device 30 and a housing 32 with a front panel 60 supporting at least one mechanical symbol indicator and, preferably a plurality of mechanical symbol indicators 70. In the illustrated 30 embodiment, gaming device 10 displays a plurality of reels such as five reels 34 in mechanical or video form in the display device 30. A display device can be any suitable viewing surface such as glass, a video monitor or screen, a liquid crystal display or any other display mechanism or apparatus. If the reels 34 are

in video form, the display device for the video reels 34 is preferably a video monitor. Each reel 34 displays a plurality of indicia such as bells, hearts, fruits, numbers, letters, bars or other images which preferably correspond to a theme associated with the gaming device 10. Furthermore, gaming device 10  
5 preferably includes speakers 36 for making sounds or playing music.

As illustrated in Fig. 2, the general electronic configuration of gaming device 10 preferably includes: processors 38 and 101a; memory devices 40 and 104a for storing program code or other data; a central display device 30; one or more mechanical award indicators 70; a sound card 42; a plurality of speakers  
10 36; and one or more input devices 44. The processor 38 is preferably a microprocessor or microcontroller-based platform which is capable of displaying images, symbols and other indicia such as images of people, characters, places, things and faces of cards. The processor 38 can communicate with a secondary processor 101a to operate the mechanical symbol indicators 70 to  
15 independently control the movement and position of each symbol display 64. The memory devices 40 and 104a can include random access memory (RAM) 46 for storing event data or other data generated or used during a particular game. The memory devices 40 and 104a can also include read only memory (ROM) 48 and 102a for storing program code which controls the gaming device  
20 10 so that it plays a particular game in accordance with applicable game rules and pay tables.

As illustrated in Fig. 2, the player preferably uses the input devices 44, such as pull arm 18, play button 20, the bet one button 24 and the cash out button 26 to input signals into gaming device 10. In certain instances it is  
25 preferable to use a touch screen 50 and an associated touch screen controller 52 instead of a conventional video monitor display device. Touch screen 50 and touch screen controller 52 are connected to a video controller 54 and processor 38. A player can make decisions and input signals into the gaming device 10 by touching touch screen 50 at the appropriate places. As further  
30 illustrated in Fig. 2, the processor 38 can be connected to coin slot 12 or bill acceptor 14. The processor 38 can be programmed to require a player to deposit a certain amount of money in order to start the game.

- It should be appreciated that although processors 38 and 101a and memory devices 40 and 104a are preferable implementations of the present invention, the present invention can also be implemented using one or more application-specific integrated circuits (ASIC's) or other hard-wired devices, or
- 5 using mechanical devices (collectively or alternatively referred to herein as a "processor"). Furthermore, although the processors 38 and 101a and memory devices 40 and 104a preferably reside on each gaming device 10 unit, it is possible to provide some or all of their functions at a central location such as a network server for communication to a playing station such as over a data
- 10 network such as a local area network (LAN), wide area network (WAN), Internet connection, microwave link, and the like. The processor 38 and memory device 40 is generally referred to herein as the computer or controller and processor 101 and memory devices 104 is generally referred to herein as the motor controller.
- 15 With reference to Figs. 1 and 2, to operate the gaming device 10 in one embodiment the player must insert the appropriate amount of money or tokens at coin slot 12 or bill acceptor 14 and then pull the arm 18 or push the play button 20. The reels or simulated reels 34 will then begin to spin. Eventually, the reels 34 will come to a stop. As long as the player has credits remaining,
- 20 the player can spin the reels 34 again. Depending upon where the reels 34 stop, the player may or may not win additional credits, and gaming device 10 may or may not activate the mechanical award indicators 70 to display an award amount to the player.

In addition to winning credits in this manner, preferably gaming device 10

25 also gives players the opportunity to win credits in a bonus round or bonus game. This type of gaming device 10 will include a program which will automatically begin a bonus round when the player has achieved a qualifying condition in the game. This qualifying condition can be a particular arrangement of indicia on a display device. The gaming device 10 preferably uses a video-

30 based central display device 30 to enable the player to play the bonus round or bonus game. In one embodiment, the qualifying condition is a predetermined combination of indicia appearing on a plurality of reels 34. As illustrated in the five reel slot game shown in Fig. 1, the qualifying condition could be the number

seven appearing on three adjacent reels 34 along a pay line 56. It should be appreciated that the present invention can include one or more pay lines 56 displayed in a horizontal and/or diagonal fashion.

#### Mechanical Symbol Indicators

- 5        In a preferred embodiment, gaming device 10 enables the player to win an initially undetermined or undisplayed award. Winning the award can occur either in a primary or base game or a secondary or bonus game. To increase the player's excitement, the amount of the variable award to be provided to the player can be displayed using one and preferably a plurality of independently
- 10      linearly moveable or oscillating mechanical symbol indicators 70. The mechanical symbol indicators 70 each independently linearly move symbol displays 64 in a substantially vertical manner in one direction or in a plurality of directions (i.e., oscillating up and down) or in a substantially horizontal manner in one direction or in a plurality of directions (i.e., oscillating side to side).
- 15      Together with one or more indicator members 62, the symbol displays 64 in one embodiment display various symbols such as award values before stopping to display the final symbols or award amount to be provided to the player. In one preferred embodiment, the indicated numbers are the individual digits of the award amount.
- 20      With reference to Figs. 3A through 5B, the mechanical symbol indicators 70 are supported in a housing 32 that is preferably connected to the cabinet of gaming device 10. The mechanical symbol indicators 70 each have a symbol display 64 that is linearly movable or which oscillates within housing 32. The housing 32 also includes at least one indicator member 62 that indicates which
- 25      of a plurality of symbols or numbers 66 displayed on each symbol display 64 are to be read by the player to determine the award amount to be provided to the player. The indicator member 62 may be supported by the housing 32 or the front panel 60. Additionally, the indicator member 62 can be positioned on the extension of the housing 32. In an alternative embodiment, one or more symbol
- 30      displays 64 linearly move out of the top or a side of the housing 32 (or cabinet) to indicate symbol(s) such as an award. In such an embodiment, a suitable award indicator may be provided at the top or side of the housing or cabinet.

In one embodiment, the front panel 60 of the housing 32 is transparent or semi-transparent to enable a player to view the moving symbol displays 64, as illustrated in Figs. 3A through 3C, 5A and 5B which also illustrate certain of the various positions of the symbol displays. It should be appreciated that all of the

5 symbol displays can move simultaneously in the same or different directions, sequentially or in any suitable manner desired by the gaming machine implementor. In these embodiments, the player can also view images in the housing 32 associated with the theme of gaming device 10 and possibly other components of the mechanical symbol indicators 70 in addition to the symbol

10 displays 64 and indicator members 62. The front panel 60 can alternatively be opaque such that only the number 66 indicated by the indicator member 62 is visible to the player as generally illustrated in Fig. 4. In this embodiment, the player can watch the numbers change as the symbol displays 64 move in relation to the housing 32.

15 The indicator member 62 can be embodied in several alternative ways as shown in Figs. 3A through 3C, 4, 5A and 5B. As illustrated in 3C, the indicator member 62 can be a mask extending across the symbol displays 64 that mark one or more symbols such as numbers 66 on each symbol display 64 to be read by the player. In this embodiment, the front panel 60 is transparent or semi-

20 transparent such that the player can view the symbol displays 64 in the housing 32. In another embodiment illustrated in Fig. 4, the indicator member 62 is a mask that shows only the symbol such as number 66 to be viewed by the player on each symbol display 64. In this embodiment, the front panel 60 is opaque such that the player cannot see inside the housing 32. It should be appreciated

25 that the alternative embodiments of indicator member 62 can be supported by the housing 32, supported by the front panel 60, incorporated into front panel 60, supported by any part of the mechanical award indicators 70 or positioned in any other suitable manner to indicate which symbols such as numbers for the player to read. It also should be appreciated that the indicator member 62 may

30 alternatively be movable in relation to the housing 32.

In other embodiments illustrated in Figs. 5A and 5B, the indicator member 62 includes several members 62a through 62d that indicate or point out the particular symbols or numbers to read on each symbol display 64. The

members 62a through 62d can include arrows as illustrated in Figs. 5A and 5B or other shapes or indicia that mark which symbols or numbers to read. Further, the indicators may include one or more lights that indicate certain symbol displays 64 are to be read or that certain symbols or numbers have a different meaning as illustrated in the example in Fig. 5B. In this example, after symbol displays 64 have stopped moving, indicator member 62d lights up in one color to indicate that that number is a multiplier to be applied to the numbers indicated by indicator members 62a and 62b that are lit in another color. Indicator member 62c is not illuminated, which indicates that symbol display does not factor into the award amount. In this example, the award amount to be provided to the player would be seventy-four multiplied by two or one hundred forty-eight. Alternatively, the indicator members 62 may be lights next to or on the symbol displays 64 or other parts of the mechanical award indicators 70. In this or any of the other embodiments, a total award amount display 58 may or may not be included to display to the player the final award amount to be provided to the player. Accordingly, it should be appreciated that the mechanical symbol indicators could be employed in a variety of manners to indicate awards to players.

In one embodiment, each mechanical symbol indicator 70 includes a symbol display 64, a support assembly, and an actuator 92. The symbol display 64 is supported by the support assembly. The support assembly and the actuator 92 are supported by or suitably mounted in the housing 32. The processor 101a controls the actuator 92 that co-acts with the support assembly to move the symbol display 62 linearly within the housing 32.

With reference to Figs. 6 through 9, a preferred embodiment of a mechanical symbol indicator 70 includes the components supported by or mounted in the housing 32. More specifically, the symbol display 64 includes a cylindrical tube with areas, positions or places 66 to display a plurality of symbols such as numbers along the length of the tube. An end cap support bracket 74 and end cap fastener 76 rigidly attach decorative end caps 72 on either end of the symbol display 64. The symbol display 64 is also rigidly attached to a support member 78. The support member 78 is rigidly fastened using suitable fasteners such as bolts to a support bracket 80.

The support bracket 80 is rigidly attached to the support assembly within the housing 32. In the preferred embodiment, the support assembly includes a lead screw assembly. Lead screw assemblies including the nut assembly 82, support brace 84, rod support 86, actuator support 88, and rod 90 can be 5 commercially purchased for example from Kerk Motion Products, Inc. The support bracket 80 is rigidly connected to the lead screw assembly via a lead screw nut assembly 82 and a slidably movable support brace 84. The support bracket 80 has posts 104 that mate with the lead screw nut assembly 82 and slidably movable support brace 84 to securely hold the support bracket 80, 10 support member 78, and symbol display 64.

The lead screw assembly is controlled by the processor 101a which causes the lead screw nut assembly 82 and any components rigidly connected to the lead screw nut assembly 82 to move in a linear direction along a lead screw assembly rod 90 within the housing 32. It should be appreciated that any 15 other suitable assembly or actuator such as a movable track, movable belt, chain and gear system or other equivalent system or assembly adapted to linearly move the symbol display 64 within the housing 32 can be used in conjunction with the present invention.

In the preferred embodiment, the lead screw assembly is powered by a 20 motor 92. The motor's crankshaft 94 is connected to the lead screw assembly via a coupling to the screw motor connector 96 and lead screw assembly motor support 88. The motor 92 is operable with processor 101a to power the lead screw assembly and move the symbol display 64. It should be appreciated that this embodiment of the mechanical award indicator 70 can be supported within 25 housing 32 through the lead screw assembly motor support 88 and/or a lead screw assembly rod support 86.

A preferred embodiment of a mechanical symbol indicator 70 also includes a position sensor. The position sensor includes a position indicator or blocking tab 102 and position detector or position detector member 98. The 30 position indicator or blocking tab 102 is rigidly attached to the symbol display 64 such that the position indicator or blocking tab 102 moves with the symbol display 64 inside or outside of the housing 32. The position detector member 98 is rigidly mounted or supported by the housing 32 or other structure such that

the detector member 98 remains stationary in respect to the housing 32. As the position indicator or blocking tab 102 moves with the symbol display 64, the detector member 98 sends a signal to the processor 101a indicating where the symbol display 64 is relative to the housing 32.

- 5        One preferred embodiment of the position sensor used in conjunction with the present invention includes a position sensor board 98 that is rigidly attached to the housing 32, a plurality of detecting optical sensors 100, and a position indicator or blocking tab 102 as illustrated in Figs. 6 through 9. The position indicator or blocking tab 102 is rigidly connected to support bracket 80
- 10      and moves with the symbol display 64 within the housing 32. Each detecting optical sensor or sensor clips 100 is positioned on the sensor board 98 such that when the position indicator or blocking tab 102 passes by or through a detecting optical sensor or sensor clips 100, a signal is sent to the processor 101a indicating the position of the symbol display 64. In one embodiment, this
- 15      position signal may also indicate to the processor 101a that a particular number 66 is highlighted to the player by indicator member 62.

A preferred embodiment of the present invention operates as illustrated in Figs. 3A through 3C. Upon a triggering event in a primary or bonus game, an undetermined or determined but undisplayed award amount is to be provided to the player. Prior to winning the award, the symbol displays 64 together with indicator member 62 can display a zero award amount as shown in Fig. 3A or any other amount. Processor 38 determines the award amount to be provided and communicates to processor 101a to activate the linear movement of the symbol displays 64 as illustrated in Fig. 3B. Other effects such as audio, visual, or audio-visual effects may or may not be used in conjunction with the random movement of the symbol displays 64 to further enhance player excitement and anticipation of the award. Finally, the processor 101a operable with the mechanical award indicators 70 including the position sensors and actuators, simultaneously or sequentially stop the movement of the symbol displays 64 in the appropriate positions to display the award amount to be provided. With the indicator member 62, the amount of the award to be provided to the player is displayed, 7482 credits as shown in Fig. 3C. It should be appreciated that each of the symbol displays could be moved for the same amount of time, different

amounts of time or randomly determined amounts of time and in the same or different directions.

In other embodiments, the numbers displayed can be added to determine the award amount to be provided, or one mechanical symbol indicator 70 can

5 indicate a multiplier to be applied to the number displayed by other mechanical symbol indicators 70 as illustrated above in Fig. 5B. It should be appreciated that the symbols or numbers displayed by the mechanical symbol indicators 70 of the present invention can be combined in other ways to determine and display the symbols or the award amount to be provided to a player.

10 In another embodiment, the processor 38 does not determine the award amount prior to activating the mechanical award indicators 70. In this embodiment, upon the occurrence of a triggering event to provide the player an undetermined award amount, processor 101a automatically begins a random movement of each of the symbol displays 64. After a period of time the

15 processor 101a randomly stops each of the symbol displays 64 in one of the positions. The processor 101a in conjunction with the position sensor then determines the symbols or award amount to provide to the player from the numbers or symbols displayed to the player. It should be appreciated that the processor 38 can be programmed such that in this embodiment, certain

20 symbols or numbers are weighted differently and thus more likely to be indicated on the symbol displays 64 than others.

In another embodiment, the mechanical symbol indicators 70 are activated when a game is not being played on gaming device 10. In this situation, the symbol displays 64 move randomly within (or outside of the

25 housing 32) and with the indicator members 62 display various symbols or award amounts possible during game play. This embodiment is activated by processor 38 when gaming device 10 is in an attract mode. The motion of the symbol displays 64 and the indication of different awards during the attract mode can help capture a player's attention and make the gaming device 10

30 more likely to be played.

In a further embodiment, the mechanical symbol indicators 70 are activated during game play to signal certain occurrences. For example, movement of the symbol displays 64 and/or the display of certain symbols can

accompany the occurrence of the start of a bonus round or game or entry into a bonus mode for gaming device 10. Further, the mechanical symbol indicators 70 can be used to indicate the start of or occurrence of an event within game play.

- 5 It should be appreciated that the present invention could thus be employed in a variety of different manners in conjunction with gaming devices such as to display an award, a series of symbols, an offer in an offer acceptance game or any other suitable game function.

In one embodiment, probabilities or different probabilities can be  
10 associated with each of the symbols on each of the symbol displays. These probabilities can be weighted such that certain symbols are more likely to be randomly generated than other symbols. For instance, higher numbers can have lower associated probabilities.

It should be understood that various changes and modifications to the  
15 presently preferred embodiments described herein will be apparent to those skilled in the art. Such changes and modifications can be made without departing from the spirit and scope of the present invention and without diminishing its intended advantages. It is therefore intended that such changes and modifications be covered by the appended claims.

## CLAIMS

The invention is claimed as follows:

1. A gaming device comprising:
  - 5 a cabinet;
  - a housing connected to the cabinet;
  - a mechanical symbol indicator mounted in the housing, said mechanical symbol indicator including a symbol display linearly movable within the housing;
  - a plurality of symbols on said symbol display;
- 10 at least one indicator member connected to the housing to indicate one of the plurality of symbols of the symbol display; and
- a processor which controls the mechanical symbol indicator.
2. The gaming device of Claim 1, wherein the plurality of symbols includes a plurality of numbers.
- 15 3. The gaming device of Claim 1, wherein the plurality of symbols includes a plurality of numerical digits.
4. The gaming device of Claim 1, wherein the indicator member includes a structure selected from the group consisting of: (a) a fixed mask across a front panel of the housing which defines at least one opening; (b) a fixed indicator positioned to indicate one of the symbols on the symbol display;
- 20 (c) an illuminatable indicator; (d) an opaque front panel of the housing which includes at least one see-through area.
5. The gaming device of Claim 1, wherein the symbol display of the mechanical symbol indicator is mounted to move in a vertical linear direction.
- 25 6. The gaming device of Claim 1, wherein the mechanical symbol indicator includes a lead screw assembly coupled with a motor controlled by the processor to linearly move the symbol display within the housing.
7. The gaming device of Claim 1, wherein the mechanical symbol indicator includes a position sensor in communication with the processor.
- 30 8. The gaming device of Claim 7, wherein the position sensor includes a position indicator and a position detector.
9. The gaming device of Claim 1, wherein the symbol display includes a tube and a support member rigidly attached to the tube.

10. The gaming device of Claim 1, wherein the symbol display linearly moves to display an award to a player.

11. A gaming device comprising:

a cabinet;

5 a housing connected to the cabinet;

a symbol indicator including a support assembly connected to the housing, a linearly movable symbol display attached to the support assembly, a plurality of symbols displayed by the symbol display, at least one indicator member connected to the housing, a position sensor connected to the housing, and an actuator connected to the symbol display; and

10 a processor operable with the support assembly, position sensor and actuator to linearly move the symbol display at least partially within the housing and stop the symbol display in a linear position where one of said symbols on the symbol display is indicated by the indicator member.

15 12. The gaming device of Claim 11, wherein the support assembly includes a lead screw assembly and a lead screw assembly motor support that connects the lead screw assembly to a motor.

13. The gaming device of Claim 11, which includes an end cap rigidly attached to each end of the symbol display by an end cap support bracket and 20 an end cap fastener, a support member attached to the symbol display that fastens to a support bracket, said support bracket attached to the support assembly.

14. The gaming device of Claim 11, wherein the indicator member includes a front panel of the housing defining a see-through area.

25 15. The gaming device of Claim 11, wherein the plurality of symbols includes a plurality of numbers.

16. The gaming device of Claim 11, wherein the plurality of symbols includes a plurality of numerical digits.

17. The gaming device of Claim 11, wherein the symbol display 30 linearly moves to display an award to a player.

18. The gaming device of Claim 11, wherein the position sensor includes a position indicator and a position detector.

19. A gaming device comprising:
- a cabinet;
  - a housing connected to the cabinet;
  - a plurality of independent mechanical symbol indicators mounted in the
  - 5 housing, each said mechanical symbol indicator including a symbol display linearly movable within the housing;
  - a plurality of symbols on each said symbol display;
  - at least one indicator member connected to the housing to indicate one of the plurality of symbols on each of the symbol displays; and
- 10 a processor which controls the mechanical symbol indicators.
20. The gaming device of Claim 19, wherein the plurality of symbols includes a plurality of numbers.
21. The gaming device of Claim 19, wherein the plurality of symbols includes a plurality of numerical digits.
- 15 22. The gaming device of Claim 21, wherein the symbol displays linearly move to display an award to a player by displaying the numerical digits on the plurality of symbol displays.
23. The gaming device of Claim 19, wherein the indicator members include a structure selected from the group consisting of: (a) a fixed mask
- 20 across a front panel of the housing which defines at least one opening; (b) a plurality of fixed indicators positioned to indicate one of the symbols on each of the symbol displays; (c) an plurality of illuminable indicators; (d) an opaque front panel of the housing which includes at least one see-through area.
24. The gaming device of Claim 19, wherein the symbol displays of
- 25 the mechanical symbol indicators are mounted to move in a substantially vertical linear direction.
25. The gaming device of Claim 19, wherein each mechanical symbol indicator includes a lead screw assembly coupled with a motor controlled by the processor to linearly move the symbol display of said symbol indicator within the
- 30 housing.
26. The gaming device of Claim 19, wherein each mechanical symbol indicator includes a position sensor in communication with the processor.

27. The gaming device of Claim 26, wherein each position sensor includes a position indicator and a position detector.
28. The gaming device of Claim 19, wherein each symbol display includes a tube and a support member rigidly attached to the tube.
- 5        29. A method of operating a gaming device, the method comprising the steps of:
- (a) enabling a player to play a game;
  - (b) upon a triggering event in the game, selecting an award amount to be provided to the player;
- 10        (c) independently linearly moving a plurality of symbol indicators, each including a plurality of numerical digits; and
- (d) stopping each symbol indicator to indicate one of the numerical digits on said symbol indicator to display a digit of the award amount to be provided to the player.
- 15        30. A method of operating a gaming device, the method comprising the steps of:
- (a) enabling a player to play a game;
  - (b) upon a triggering event in the game, independently linearly moving a plurality of symbol indicators;
- 20        (c) randomly stopping each symbol indicator and sensing the position of each symbol display; and
- (d) providing an award amount to the player corresponding to symbols indicated an indicating member associated with the symbol displays.
31. A gaming device and a method substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.



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Application No: GB 0321498.8  
Claims searched: 1 - 30

Examiner: Tom Sutherland  
Date of search: 24 December 2003

## Patents Act 1977 : Search Report under Section 17

### Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance	
X	1 - 5, 11	GB 2383668 A	(JPM) See Fig. 1, page 1 lines 13 to 20
X, Y	X: 1 - 5, 11 Y: 19 - 24, 26 - 30	GB 2287567 A	(BARCREST) See Figs 1 and 2.
Y	19 - 24, 26 - 30	GB 1275697	(ELDER) See Figs 1 and 3.
A		GB 2201821 A	(NSM) Fig. 1, rotatable disc 15.
A		GB 0338504	(FORD)

### Categories:

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| X Document indicating lack of novelty or inventive step   | A Document indicating technological background and/or state of the art.  |
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| & Member of the same patent family  | E Patent document published on or after, but with priority date earlier than, the filing date of this application. |

### Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC<sup>6</sup>:

G4V

Worldwide search of patent documents classified in the following areas of the IPC<sup>7</sup>:

G07F

The following online and other databases have been used in the preparation of this search report:

EPODOC, JAPIO, WPI